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WHAT IS CLAIMED IS:

1. A method of communicating connectionless and connection oriented signals using at least one common network element, comprising:

receiving connectionless and connection oriented signals from a plurality of source peripheral network elements;

determining a signaling type associated with each signal, the signaling type comprising connectionless signaling or connection oriented signaling;

appending a transport label to each signal, each transport label comprising an indication of the signal's signaling type;

communicating the signals and appended transport labels toward destination peripheral network elements according to signaling procedures associated with each signal's signaling type.

2. The method of Claim 1, wherein the signaling type further comprises a combination of connectionless and connection oriented signaling.

3. The method of Claim 1, wherein at least some of the plurality of signals comprise Multi-protocol label switching signals, and wherein at least some of the plurality of signals comprise Internet Protocol signals.

4. The method of Claim 3, wherein at least some of the plurality of signals comprise multi-protocol label switching signals with asynchronous transfer mode, Frame Relay, or packet-over-SONET encoding.

5. The method of Claim 1, wherein each transport label comprises:

a format field operable to identify the signal's signaling type; and

a label value field containing information useful in processing the associated signal according to its signaling type

6. The method of Claim 5, wherein at least one signal comprises a connectionless signal and wherein the label value field of that signal's transport label comprises a node identification operable to identify a network element through which the at least one signal will be routed.

7. The method of Claim 5, wherein at least one signal comprises a connection oriented signal and wherein the label value field of that signal's transport label comprises a path identifier operable to facilitate construction of a virtual circuit over which the at least one signal will traverse.

8. The method of Claim 1, wherein at least one of the transport labels comprises a plurality of sub-transport labels, each sub-transport label providing an instruction regarding the associated signal's communication toward one of the destination peripheral network element.

9. The method of Claim 8, wherein the plurality of sub-transport labels comprise a stack of sub-transport labels, and wherein the top sub-transport label identifies a node identification useful in determining a next hop for a connectionless signal or a path identification useful in determining a virtual circuit for a connection oriented signal.

10. The method of Claim 9, wherein the sub-transport label at the bottom of the stack of sub-transport labels includes an interface identifier operable to specify an interface between a network element processing the signal and the destination peripheral network element.

11. A method of communicating connectionless and connection oriented signals using at least one common network element, comprising:

receiving connectionless signals and connection oriented signals at a first network element, each signal including a transport label having a format field identifying a signaling type associated with the signal and a label value field containing information useful in processing the signal according to its signaling type;

for each signal, examining the format field of the transport label to determine the signal's signaling type;

for each signal, interpreting the information in the label value field of the transport label according to the signal type; and

for each signal, communicating the signal to another network element using signaling procedures associated with the signal's signaling type.

12. The method of Claim 11, wherein the signaling type further comprises a combination of connectionless and connection oriented signaling.

13. The method of Claim 11, wherein the transport label comprises a stack of sub-transport labels, each sub-transport label providing an instruction regarding the associated signal's communication toward one of the destination peripheral network element, and wherein the top sub-transport label identifies a node identification useful in determining a next hop for a connectionless signal or a path identification useful in determining a virtual circuit for a connection oriented signal.

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14. The method of Claim 13, wherein the sub-transport label at the bottom of the stack of sub-transport labels includes an interface identifier operable to specify an interface between a network element processing the signal and the destination peripheral network element.

15. The method of Claim 13, wherein determining the signal's signaling type and interpreting the information in the label value field of the transport label according to the signal type comprises:

examining the top sub-transport label to determine that the signal comprises a connectionless signal; and

comparing the value in the label value field of the top sub-transport label to a node identification associated with the first network element.

16. The method of Claim 15, further comprising:

determining that the node identification associated with the first network element does not match the value in the label value field of the transport label; and

routing the signal toward the network element associated with the node identification in the label value field of the top sub-transport label.

17. The method of Claim 15, further comprising:

determining that the node identification associated with the first network element matches the value in the label value field of the top sub-transport label;

removing the top sub-transport label from the stack of sub-transport labels; and

examining the next sub-transport label to determine further processing instructions.

18. The method of Claim 13, wherein determining the signal's signaling type and interpreting the information in the label value field of the transport label according to the signal type comprises:

examining the top sub-transport label to determine that the signal comprises a connection oriented signal and that the label-value field in the top sub-transport label comprises a path identifier; and

using the value in the label value field of the top sub-transport label to at least begin establishing a virtual circuit between the first network element and another network element.

19. A communication system operable to communicate connectionless signals and connection oriented signals using at least one common network element, the system comprising:

a first core network element operable to receive a signal associated with a signaling type, the signaling type comprising connectionless signaling or connection oriented signaling, the first core network element further operable to append to the signal a transport label including an instruction regarding how to process the signal according to its signaling type;

a second core network element operable to receive the signal with appended transport label, to examine the transport label to determine the signaling type associated with the signal, and to process the signal according to the associated signaling type.

20. The system of Claim 19, wherein the transport label comprises:

a format field operable to identify the signal's signaling type; and

a label value field containing information useful in processing the associated signal according to its signaling type.

21. The system of Claim 19, wherein the transport label comprises a stack of sub-transport labels, each sub-transport label providing an instruction regarding the associated signal's communication toward one of the destination peripheral network element, and wherein the top sub-transport label identifies a node identification useful in determining a next hop for a connectionless signal or a path identification useful in determining a virtual circuit for a connection oriented signal.

22. The system of Claim 21, wherein the sub-transport label at the bottom of the stack of sub-transport labels includes an interface identifier operable to specify an interface between a network element processing the signal a destination peripheral network element.

23. The system of Claim 21, wherein the second core network element comprises a processor operable to:

examine the top sub-transport label to determine that the signal comprises a connectionless signal; and

compare the node identification in the top sub-transport label to a node identification associated with the first network element.

24. The system of Claim 23, wherein the processor is further operable to determine that the node identification associated with the first network element does not match the node identification in the transport label; and

wherein the second core network element comprises a core interface operable to route the signal toward the network element associated with the node identification identified in the top sub-transport label.

25. The system of Claim 23, wherein the processor is further operable to determine that the node identification associated with the first network element matches the node identification in the transport label, to remove the top sub-transport label from the stack of sub-transport labels, and to examine the next sub-transport label to determine further processing instructions.

26. The system of Claim 21, wherein the second core network element comprises a processor operable to:

examine the top sub-transport label to determine that the signal comprises a connection oriented signal and that the label-value field in the top sub-transport label comprises a path identifier; and

use the value in the label value field of the top sub-transport label to at least begin establishing a virtual circuit between the first network element and another network element.

27. A core network element operable to facilitate communication of signals associated with various signaling types received from a first peripheral network element to a second peripheral network element, the core network element comprising:

a processor operable to receive a network signal from the first peripheral network element and to determine a signaling type associated with the network signal, the processor further operable to generate a transport label including an instruction regarding how to process the signal according to its signaling type, and to append the transport label to the network signal to generate a formatted network signal; and

a core interface operable to receive the formatted network signal and to facilitate communication of the formatted network signal to another core network element for processing according to the signaling type identified in the transport label.

28. The core network element of Claim 27, wherein the transport label comprises:

a format field operable to identify the signal's signaling type; and

a label value field containing information useful in processing the associated signal according to its signaling type.

29. The core network element of Claim 27, wherein the transport label comprises a stack of sub-transport labels, each sub-transport label providing an instruction regarding the associated signal's communication toward one of the destination peripheral network element, and wherein the top sub-transport label identifies a node identification useful in determining a next hop for a connectionless signal or a path identification useful in determining a virtual circuit for a connection oriented signal.

30. The core network element of Claim 29, wherein the sub-transport label at the bottom of the stack of sub-transport labels includes an interface identifier operable to specify an interface between a network element processing the signal a destination peripheral network element.

31. The core network element of Claim 29, wherein the processor is operable to:

examine the top sub-transport label to determine that the signal comprises a connectionless signal; and

compare the node identification in the top sub-transport label to a node identification associated with the core network element.

32. The core network element of Claim 31, wherein the processor is further operable to determine that the node identification associated with the core network element does not match the node identification in the transport label; and

wherein the second core network element comprises a core interface operable to route the signal toward the network element associated with the node identification identified in the top sub-transport label.

33. The core network element of Claim 31, wherein the processor is further operable to determine that the node identification associated with the core network element matches the node identification in the transport label, to remove the top sub-transport label from the stack of sub-transport labels, and to examine the next sub-transport label to determine further processing instructions.

34. The core network element of Claim 29, wherein the processor is operable to:

examine the top sub-transport label to determine that the signal comprises a connection oriented signal and that the label-value field in the top sub-transport label comprises a path identifier; and

use the value in the label value field of the top sub-transport label to at least begin establishing a virtual circuit between the core network element and another network element.

35. The core network element of Claim 27, further comprising a peripheral interface operable to receive the network signal from the first peripheral network element, and to communicate network signals received from core network elements to the second peripheral network element.

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